Human Physiology 2009 vol.35 N6, pages 747-754

Age- and sex-related characteristics and mechanisms of adaptations during the prepubertal and pubertal periods of development

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Abstract

Integrated study of the functional state of the sympathoadrenal system and the adrenal cortex in children of both sexes aged 10-15 years. The study was conducted on the basis of the daily adrenaline, noradrenaline, 17-ketosteroid, and 17-oxycorticosteroid excretion values, which allowed certain synchrony to be established in the manifestation of the activity of the transmitter link of the sympathoadrenal system and the adrenal cortex androgenic and glucocorticoid functions with age, during sexual maturation. The heterogeneous character of maturation was found in the sex groups: in girls at an age of 10 and 12 years and in the boys at an age of 14-15 years. Changes in the excretion of the hormones and hormone metabolites with different directions and rates in the age-sex groups were observed throughout the academic year. In 14- to 15-year-old boys, a sharp increase in the daily excretion of the glucocorticoid metabolites accompanied by a substantial decrease in the age-related noradrenaline excretion values and the sex hormone metabolite values at an age of 15 years was observed. In the girls, these values varied within the age range, which indicates a more perfect character of the neuroendocrine regulation of their physiological functions in the period of sexual maturation.

http://dx.doi.org/10.1134/S0362119709060127